

33. BURROWING BEHAVIOUR OF THE SHORE CRAB *OCYPODA MACROCERA* H. MILNE EDWARDS FROM SUNDARBAN, WEST BENGAL

(With one text-figure)

Although brachyuran crabs comprise one of the major components of coastal macrofauna of the Sundarban delta, very little is known about the burrowing behaviour of these crabs, especially ocypodid crabs, from this region (Bakshi *et al.* 1980; Chakraborty *et al.* 1986; Bhunia *et al.* 1989; Mandal and Nandi, 1989; Nandi and Dev Roy, 1991; Nandi and Pramanik, 1994; Bairagi, 1995). This study deals with structure and distribution of burrows of the ocypodid crab, *Ocyroda macrocera* H. Milne Edwards.

Initially we studied the sea-shores of Bakkhali and Jambudwip in 1986, and subsequently reinvestigated Bakkhali beach, Sundarban, in 1996. In all, 188 burrows, 75 in 1986 and 113 in 1996 (Table 1) were studied, to ascertain the course of the burrows. The burrows were round slightly inclined and descending downwards (Fig. 1) and were found at the sand-flats between High Water Spring Tide (HWST) and High Water Neap Tide (HWNT). They usually had one external opening and occasionally up to three openings with inter-connections between them. The diameter of the external opening varied from 1.9 to 7.2 cm, descending to a depth of 7.9 to 46.2 cm (Table 1).

It is evident from Table 1 that more than 60% burrows were of 30 mm to 50 mm diameter. The depth of the burrow reaches its peak in case

of burrow diameters ranging from 40 to 50 mm. This indicates that the crabs inhabiting burrows of 30 - 50 mm diameter were dominant over others. However, the crabs occupying burrows of 40 - 50 mm diameter appear to be more active burrowers.

The burrows were usually located on moist mid-littoral sand-flats having moisture content ranging from 11.8 - 23.0%, and burrow temperature 25.5 - 27.5 °C when air temperature was 20.0 - 22.5 °C. The number of burrows was found to vary from 2 - 10 per square metre with an average of 3.6 per sq. m. The maximum density was recorded at the middle of mid-littoral zone, wherein an average density of 6.5 per sq. m was encountered in January, 1996. The average density of burrows near the brick embankment at Bakkhali beach was also found to be on the higher side (5.9/sq. m.) in December 1986. But in 1996, the same site was found to be abandoned by the crabs, probably due to increased winter fishing activities around this area. The depth of burrows near the embankment site was invariably low and the crabs below the brick zone could be captured easily.

The literature on the ecological distribution of ocypodid crabs (Ono, 1965; Jones, 1972; Lighter, 1974; Crane, 1975; Warner, 1977; Murai *et al.* 1982, Macintosh, 1984) indicates that the

TABLE 1
DISTRIBUTION AND DEPTH OF BURROWS OF *OCYPODA MACROCERA* FROM SUNDARBAN

Burrow diameter (mm)	Burrow depth (cm)	Occurrence (%) of burrows at		
		Bakkhali beach	Jambudwip	
		1996 (N=113)	1986 (N=42)	1986 (N=33)
Up to 20 mm	9.0-10.5	1.7	2.4	3.0
20 to 30 mm	7.9-23.0	34.5	21.4	18.1
30 to 40 mm	11.1-32.6	39.8	33.3	30.3
40 to 50 mm	17.2-46.2	20.3	33.3	36.3
50 to 60 mm	26.0-30.0	2.6	4.7	9.1
60 to 70 mm	26.0	0.9	2.4	3.0
70 to 80 mm		-	2.4	-

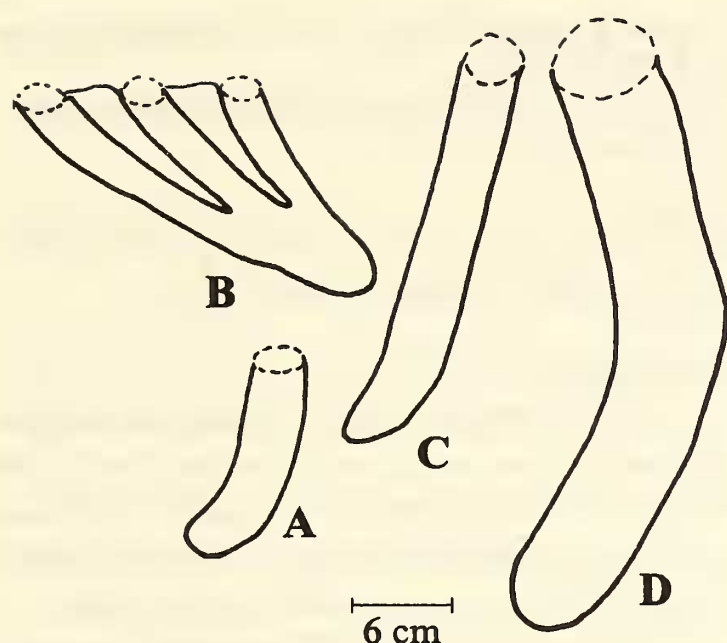


Fig. 1. *Ocypoda macrocera* burrows with single external opening (A, C, D) and three external openings (B).

distribution, depth and zonation of burrows are associated with the nature of the substratum, food availability, humidity, temperature, desiccation and water stresses of the intertidal environment. Human activities also play an important role in the distribution of ocypodid

crabs. Thus the absence of this fascinating red shore crab species from some areas in the beach indicates their sensitivity to increased human interference and stresses the need for coastal zone management.

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34. DISTRIBUTION AND HOMING OF TREE SNAIL *RACHIS BENGALENSIS* LAMARCK (GASTROPODA) ON A NEW HOST PLANT

The tree snail *Rachis bengalensis* Lamarck (Gastropoda), was found only in six districts of West Bengal viz. Calcutta, Hooghly, Malda, North 24-Parganas, South 24-Parganas, and Purulia (FAUNA OF WEST BENGAL - STATE FAUNA SERIES-3; Part 9, MOLLUSCA; Z.S.I. Calcutta 1992; Raut & Biswas 1991. But the same species (Z.S.I., lot no. Moll-906 IR No. 20196) was also found by us from the school compound of Baishnabchak (15 km from Kolaghat Station, beside the river Rupnarayan) Midnapur, West Bengal, India. Despite thorough observations, the authors did not find this snail at any other places in this district except at Baishnabchak.

Though Gude (1914) described its taxonomic characters and Raut & Biswas (1991) described its natural history, our observations differ in a few points. According to Raut & Biswas (loc. cit.) the snails were very specific for hardwood trees viz. *Mangifera indica*, *Aegle marmelos*, *Zizyphus mauritiana*, *Erythrina indica*, *Citrus aurantifolia* and *Lannaea coromandeliça*. But we observed that, although all the above mentioned trees were present in the garden in large numbers, the snail, *Rachis benghalensis* was found only on *Codiaeum variegatum* and *Aganosoma dichotoma*. Both these species are bushy shrubs. The snails were observed on these plants in colonies. They occasionally came down from their host plants at night, but never climbed *Mangifera indica*, *Aegle marmelos*, *Erythrina indica* and *Citrus aurantifolia* situated nearby. A few snails however, were observed occasionally on *Zizyphus*

mauritiana.

From our observations, we can conclude that the snails are not very specific to their host plant. Moreover, their first preference was for *Codiaeum variegatum*, followed by *Aganosoma dichotoma*, *Zizyphus mauritiana* and other plant species.

According to our study these snails generally prefer semi-decomposed leaves rather than bark, as their food. Regarding homing, in most cases (85%) after foraging, they were able to come back to the same host plant day after day. The snails travelled about 240 (30 - 735 ± 86) cm, in a night, though the distance covered by this snail depends on its size and amount of rainfall during the night. Regarding egg laying, our findings are similar to those of Raut & Biswas (loc. cit.). We, however, observed that a few snails laid their eggs on the dorsal surface of the leaf of *Aganosoma dichotoma*, but these failed to hatch.

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